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| Notice of Allowability | Application No. | Applicant(s) | |
| | 10/796,540 | HOANG ET AL. | |
| | Examiner | Art Unit | |
| | John B. Vigushin | 2841 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 28 Jul 2006.
2. ☒ The allowed claim(s) is/are 2-10, 12-20 and 22-30.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

1. The present Office Action is responsive to Applicant's Amendment filed July 28, 2006. The Examiner acknowledges the amendments to Claims 2, 3, 5, 6, 8, 10, 12, 13, 15, 18, 20, 22, 23, 25, 26, 28 and 30, and the cancellation of Claims 1, 11 and 21. Claims 2-10, 12-20 and 22-30 remain pending in the instant amended Application.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The dependency of Claim 6 has been changed to meet the 37 CFR 1.75(a) requirements of proper antecedent basis for "the third contact elements" which is to be found in Claim 3, and not in Claim 5. This has been pointed out in the Examiner's objections to Claims 6, 16 and 26 in the previous Office Action of April 10, 2006. Claims 6, 16 and 26 shared the identical defect which the Applicant appropriately corrected in Claims 16 and 26, as recommended by the Examiner. However, the Applicant has indicated the intention to correct the above-cited defect of Claim 6 in accordance with the Examiner's recommendation, analogous to the corrections of Claims 16 and 26 (see Applicant's remarks on p.7 of the instant Amendment, under Claim Objections), but instead amended Claim 6 to depend from Claim 5 instead of Claim 3 where the

antecedent basis is recited. Therefore, Claim 6 has been amended by the Examiner as follows:

In Claim 6, line 1: "5" has been changed to --3--.

Allowable Subject Matter

3. Claims 2-10, 12-20 and 22-30 have been allowed.

4. The following is an examiner's statement of reasons for allowance:

As to base Claim 5, patentability resides in **the combination of** *at least one of the first and second contact elements comprise a plurality of solder pads **and** a stiffener attached to the upper surface of the third portion and located between the upper surface of the third portion and the first portion*, in further combination with the other limitations of the claim.

As to base Claim 15, patentability resides in **the combination of** *at least one of the first and second contact elements comprise a plurality of solder pads **and** attaching a stiffener attached to the upper surface of the third portion and located between the upper surface of the third portion and the first portion*, in further combination with the other limitations of the claim.

As to base Claim 25, patentability resides in **the combination of** *at least one of the first and second contact elements comprise a plurality of solder pads **and** a stiffener attached to the upper surface of the third portion and located between the upper surface of the third portion and the first portion*, in further combination with the other limitations of the claim.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Claims 5, 2-4, 7, 6, 10, 8, 9, 15, 12-14, 17, 16, 18-20, 25, 22-24, 27, 26 and 28-30 of the instant allowed Application will be renumbered as Claims 1-27, respectively, for publication in the issued patent.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Kang et al. discloses a flexible circuit with first, second and third portions, at least, that are successively folded over into a stacked device assembly (Figs. 1, 2 and 3A,B), chips 72 wirebonded to the flexible circuit bond pads 58 (evidently the wires 76 are soldered to the bond pads 58 of the flex circuit but Kang et al. is silent on this point; but the flex circuit does include a solder mask layer 68; col.6: 49-54). However, Kang et al. does not teach a stiffener on any of the first, second, or third portions of the flex circuit. Kang et al. teaches that the rigidity of the flexible sheet is controlled by the materials used to fabricate it (col.14: 19-36).

b) Solberg (US 6,121,676; already of record in the instant Application) discloses, in Fig. 19, first, second and third portions of a flex circuit successively folded over and a stiffener 860 on the lowest portion but does not teach solder pads as the contact

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elements of the other portions; rather, the devices 826 (Fig. 19) and 26 (Figs. 4A,B) have leads 14 that are electrically connected and mechanically adhered to conductive attachment sites 18 on the flex circuit by way of an interconnect system comprising compliant pads 31 and an adhering encapsulant 35 (Figs. 4A,B; col.7: 15-54).

c) Kim et al. (US 6,225,688 B1; already of record in the instant Application and the CIP of US 6,121,676) includes the same embodiments described above in the parent Solberg patent US 6,121,676. See Figs. 4A,B and 19 and col.9: 12-51 in Kim et al.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Vigushin whose telephone number is 571-272-1936. The examiner can normally be reached on 8:30AM-5:00PM Mo-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


John B. Vigushin
Primary Examiner
Art Unit 2841

jbv
August 19, 2006